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Barley Various Weights for Fattening Pigs

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BARLEY Various Weights For Fattening Pigs

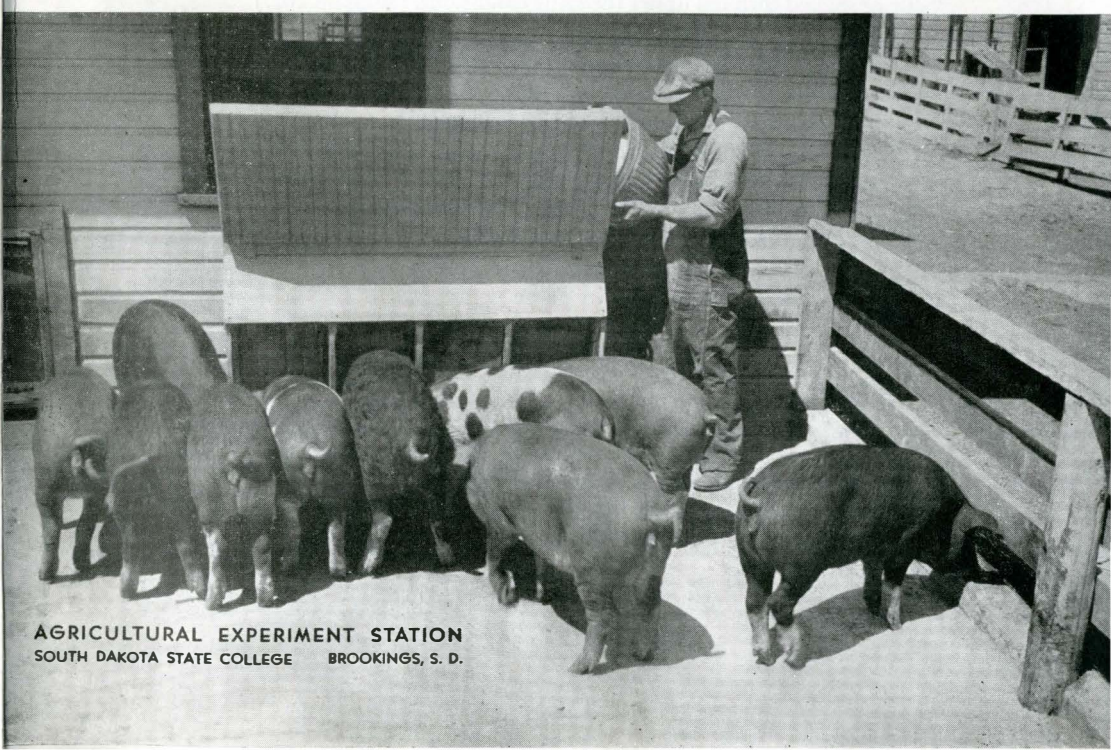
By Turner Wright

Barley for years has been one of South Dakota's most dependable feed crops and no doubt will continue to be. A large amount of the crop is fed to swine. Some of the barley which will be fed will be of good quality and some of it will be light in weight and of low grade.

The South Dakota Experiment Station has conducted several experiments during the past years to determine the value of barley as a feed for swine as compared with other grains. The results of comparing standard-grade barley with corn and methods of feeding have been given in previous publications, most of which are no longer available for distribution. The most important conclusions drawn from data presented in these previous publications follow:

1. Grinding is the most efficient method of utilizing barley as a feed for swine, ground barley fed dry being more efficient than whole barley fed either dry or soaked. (Bulletin 192.)

2. Pigs fattened on ground barley and tankage require more grain but less tankage than pigs fattened on shelled corn and tankage. (Bulletin 216 and 262.)



AGRICULTURAL EXPERIMENT STATION
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Table 1. Comparison of Feeds for Summer and Winter

	SUMMER FEEDING Hogs fed on pasture		WINTER FEEDING Hogs fed in dry lot	
	Shelled Corn Protein Supplement Mineral	Ground Barley Protein Supplement Mineral	Shelled Corn Protein Supplement Mineral Alfalfa hay	Ground Barley Protein Supplement Mineral Alfalfa hay
Number of pigs	47	47	44	44
Average number of days fed	95	99	93	96
Average initial weight per pig	75.0	74.5	86.4	86.0
Average final weight per pig	230.0	226.0	230.2	229.8
Average daily gain per pig	1.63	1.53	1.60	1.50
Feed consumed for 100 lbs. gain				
Shelled corn	345.0		372.0	
Ground barley		424.0		411.0
Protein supplement	22.0	16.0	33.0	24.0
Alfalfa hay			2.0	2.3
Mineral	1.1	1.5	1.2	1.4

3. Limiting the amount of tankage fed to pigs being fattened on barley, tankage, and pasture resulted in a slight saving in the total amount of feed required to produce 100 pounds of gain as compared with pigs self fed barley and tankage, free choice and pasture .

4. Ground barley fed with a protein supplement and mineral to spring pigs on pasture when compared with shelled corn and a protein supplement, fed under the same conditions gave only 86 percent the feeding value of the shelled corn. (Bulletin 262.)

5. Ground barley fed with a protein supplement, a mineral mixture, and alfalfa hay to fall pigs fattened in dry lots in winter gave 95 percent the feeding value of shelled corn fed under the same conditions. (Bulletin 262.)

6. Spring pigs fed ground barley, a protein supplement, and mineral on pasture in summer compared with fall pigs fed ground barley, a protein supplement, mineral, and alfalfa hay in winter required as much barley but less protein supplement to produce 100 pounds of gain.

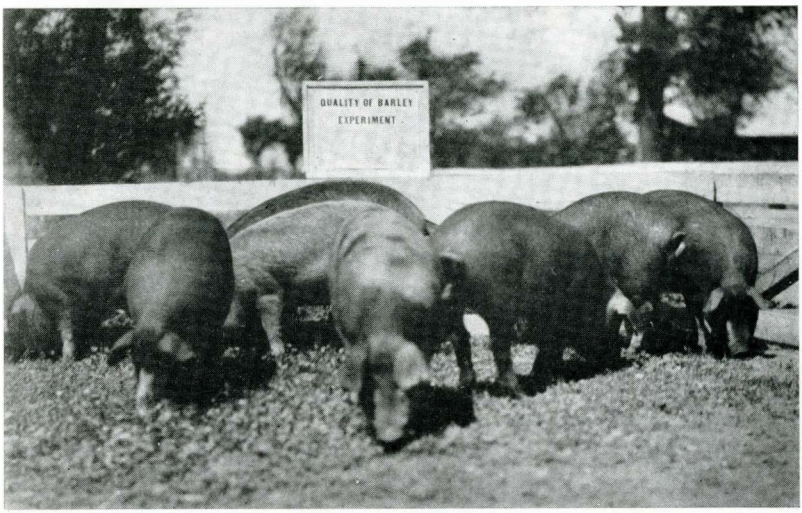
7. Spring pigs fed shelled corn, a protein suplement, and mineral on pasture in summer compared with fall pigs fed shelled corn, a protein supplement, mineral, and alfalfa hay in winter required both less corn and protein supplement to produce 100 pounds of gain.

A summation of the results of the winter and summer feeding experiments reported in Bulletin 262 is given in Table 1.

Barleys of Different Test Weights

All of the foregoing results had to do with good grade heavy barley testing around 48 pounds per bushel. Frequently, however, normal growth and maturity of barley is checked by hot winds, dry weather, or other factors with the result that much light weight barley is produced. Practically all of this lightweight barley which goes on the market is classed as feed barley and often sells for a comparatively low price.

In order to obtain definite information as to the actual feeding values of these lightweight barleys of different test weights per bushel a series of four feeding experiments have been conducted recently by the South Dakota Experiment Station. Good thrifty pigs raised in the College herds were used in all of these experiments. The grain fed in every lot each year was supplemented with tankage, alfalfa hay, and a mineral mixture each self-fed, free-choice



Pigs representative of animals studied averaged 96 pounds at the start of the feeding experiments. Fed lightweight barley, they were ready for market in 98 days, carrying good finish and market weight of 235 pounds.

method. All of the barley used was ground to a medium degree of fineness with a hammer mill using a 3/16-inch screen. Shelled corn was used. All grain was self-fed. The first trial was conducted in 1936 and the fourth in 1939.

Test weights of the grains used in the first trial were shelled corn 56, heavy barley 49, medium barley 41, and light barley 27 pounds per bushel. The pigs fed the heavyweight barley and those fed corn made practically the same rate of gain. As in previous tests, the pigs fed the heavy barley required more grain but less tankage than the pigs fed corn, to make 100 pounds of gain. The pigs fed the barleys with the lighter test weights consumed more tankage for 100 pounds gain than those fed the heavyweight barley, the amounts increasing as the test weights per bushel decreased. With shelled corn valued at 70 cents a bushel, tankage at $4 a hundred-weight, alfalfa hay at $10 a ton, and mineral at 3 cents a pound, the heavy barley was worth 55 cents, the medium barley 46 cents, and the light barley 39 cents a bushel. Cost of grinding should be deducted from the above values for barley.

Test weights of the grain used in the second trial were shelled corn 56, heavy barley 48, medium barley 39, and light barley 29 pounds per bushel.

Results obtained in this trial were similar to those obtained in the first except for a slightly increased grain requirement for the heavy barley and lower grain requirements for the medium and light weight barleys. In this feeding trial the amount of grain required to produce 100 pounds of gain was practically the same for the heavy and medium weight barleys. An increase in the amount of tankage consumed was again evidenced for the lighter weight grains. With corn, tankage, alfalfa hay, and mineral valued as before, heavy barley was worth 52, medium barley 50, and light barley 43 cents a bushel, the cost of grinding to be deducted from these values.

Test weights of the grain used in the third trial were corn 56, heavy barley 48, medium barley 40, light barley 32, and oats 32 pounds per bushel. Results obtained in this third trial were surprisingly different from those obtained in the first two, the lightweight barleys making a much better showing. All of the pigs fed barley made faster gains than those fed corn, and there were practically no differences in the rates of gain for the three barley-fed lots. The feed required for 100 pounds of gain likewise was practically the same for these three lots. Values for the three different weights of barley on the basis of prices previously used for the other feeds were heavy barley 58, medium barley 56, and light barley 58 cents a bushel. Another surprising result was that the tankage requirement for the barley-fed lots was practically the same and only slightly lower than for the corn-fed lot. Why the lightweight barleys used in this trial made so much better showing than those used in the first two and in a subsequent trial conducted in 1939 is still unexplained.

One lot of pigs fed ground oats was included in the third trial. Pigs fed

Spartan barley as feed for pigs is increasing in popularity in South Dakota. The picture of the Spartan barley field shown above was taken in Potter county.

the oats made slower gains with a higher grain requirement for 100 pounds of gain than the pigs fed lightweight barley with the same test weight per bushel. Pigs fed the oats, however, used approximately 25 percent less tankage for 100 pounds of gain. Further experimental work is needed before drawing definite conclusions as to the comparative feeding values of oats testing 32 pounds per bushel and light weight barley with the same test weight for fattening pigs.

Test weights for the grain used in the fourth trial were corn 56, heavy barley 48, medium barley 40, and light barley 32 pounds per bushel. The amount of grain required to produce 100 pounds of gain was lower for all lots in this trial than in the three previous ones. Heavy barley fed in this trial also gave a higher value in comparison with corn than in any of the three previous trials, the amount of grain required for 100 pounds of gain being prac-

Table 2. Relative Values of Barleys of Different Test Weights as Feed for Pigs

	Lot 1 Shelled Corn Fed	Lot 2 Ground Heavy Weight Barley Fed	Lot 3 Ground Medium Weight Barley Fed	Lot 4 Ground Light Weight Barley Fed
Number of pigs	38	38	38	37
Average number of days fed	90.7	84.6	94.1	97.8
Average initial weight per pig	95.4	95.5	93.8	95.8
Average final weight per pig	236.8	235.2	235.5	234.6
Average daily gain per pig	1.56	1.65	1.50	1.42
Feed consumed for 100 lbs. gain				
Shelled corn	382.4			
Ground barley		417.5	436.8	459.4
Tankage	28.2	25.4	29.2	31.5
Alfalfa hay	2.7	2.5	2.7	3.3
Mineral Mixture	.8	.7	.97	.9
Total	**414.1**	**446.1**	**469.6**	**495.1**

tically the same as for the corn. Pigs fed the corn, however, again showed a higher tankage requirement. The amounts of barley required for 100 pounds of gain as in the first trial increased with the lighter test weights but the tankage remained practically the same as for the heavy barley. Using the same feed prices as in the other trials the heavy barley was worth 56, the medium barley 57, and the light barley 55 cents a bushel, cost of grinding to be deducted.

Data (Table 2) show that for the average of the four years the pigs fed ground heavy barley made faster gains than those fed shelled corn. Pigs fed the medium and light weight barleys, although making good gains, required from one to two weeks longer feeding periods than those fed the corn and heavy barley. In these four trials, as in experiments conducted previously, the pigs fed the heavy barley required more grain but less tankage to produce 100 pounds of gain than those fed shelled corn. The difference in the tankage requirement, however, was not so great. Pigs fed the two lighter weight barleys required more grain and more tankage as well as longer feeding periods. On the basis of the feed prices previously used, the heavy barley was worth 56, medium barley was worth 52, and light barley 48 cents a bushel. The cost of grinding should be deducted from these values. Expressed in another way,

if one values shelled corn at $1.25 a hundred-weight and tankage at $4 a hundred-weight the ground heavy barley used in these experiments had 94 percent, the ground medium barley 87 percent, and the ground light barley 80 percent the feeding value of shelled corn. The ground heavy barley was worth $1.17, the ground medium barley $1.08 and the ground light barley $.99 a hundred-weight.

Comparing Barleys of Different Types

Farmers, many times, have requested information as to the comparative feeding values of malting type barleys of less than standard test weight and Spartan barley of 48 pounds test weight or better as frequently the earlier maturing Spartan barley will be of standard weight while the later maturing barley will be lighter due to hot winds or dry weather. Two feeding trials have been conducted in comparing barley of the Spartan variety, a two-row type testing 48 pounds per bushel with barley of the ordinary malting types testing 42 pounds per bushel and commonly referred to as feed barley.

The first trial was conducted in the winter of 1940-41. Twenty fall pigs were divided into two uniform lots for this comparison. All of the pigs were fed a protein mixture made of tankage two parts and soybean meal one part, ground alfalfa one part, and a mineral mixture made of ground limestone two parts, steamed bone meal two parts, and common loose salt one part. All of the feeds were self-fed, free-choice method.

Pigs fed the Spartan barley made slightly faster gains with a decidedly lower feed requirement for 100 pounds of gain than those fed the barley of the malting type, the total amount of feed required for 100 pounds of gain being 387 pounds for the Spartan barley and 467 pounds for the malting type barley. The second trial was conducted in the summer of 1941. Forty pigs divided into four lots of 10 pigs each were used. Two of these lots were fed on oats and rape pasture and two were fed in dry lots. In this trial the protein supplement consisted of two parts tankage and one part soybean meal. The pigs fed in dry lots were fed alfalfa hay free-choice method. In this trial pigs fed the Spartan barley again made the fastest gain with the lowest feed requirement. The total amount of feed required to produce 100 pounds of gain

Table 3. Comparative Value of Spartan Barley and Malting-Type Barley as Feed for Pigs

	Spartan barley	Malting type barley
Number of pigs	30	30
Average number of days fed	105	113
Average initial weight per pig	76.0	75.0
Average final weight per pig	231.4	230.8
Total gain per pig	155.5	155.8
Average daily gain per pig	1.48	1.38
Feed consumed for 100 lbs. gain		
Ground barley	397.0	439.3
Tankage	17.0	25.1
Soybean meal	8.5	12.6
Alfalfa	4.4	5.7
Mineral	1.0	.9

was 452 pounds for the Spartan barley and 492 pounds for the malting type feed barley.

Data (Table 3) show that pigs fed lighter weight malting type barley not only made slower gains but consumed more barley and practically 50 percent more protein supplement for 100 pounds gain than the pigs fed the standard weight Spartan barley. The pigs from both groups carried practically the same degree of finish when fed to the same final weight. If we value the 42 pound test malting type barley at 42 cents a bushel, tankage at $4 a hundred-weight, soybean meal at $2.50 a hundred-weight, alfalfa at $10 a ton, and mineral at 3 cents a pound, the 48-pound test Spartan barley was worth 48 cents a bushel.

Trebi Barley Compared With a Malting Barley

One trial has been run in which ground Trebi barley, a feed-type barley, was compared with ground Velvet barley, a malting barley. Both barleys were supplemented with tankage, alfalfa hay, and a mineral mixture. All feeds were self-fed, free-choice method. The Velvet barley tested 48 pounds per bushel and the Trebi barley tested 46 pounds per bushel. Eight good thrifty shoats weighing an average of 123 pounds at the beginning were fed in each lot in this trial. They were fed to an average weight of 226 pounds for each lot. Pigs fed the Velvet barley gained at the rate of 1.49 and those fed the Trebi barley gained at the rate of 1.48 pounds each day. There also was but little difference in the amount of feed required to produce 100 pounds of gain, the amount required for the pigs fed the Velvet being 457 and for those fed the Trebi 464 pounds. These data would seem to indicate that barleys of these two types with equal test weight have practically the same feeding value when fed to fattening shoats.

Hulless Barley Compared With a Hulled Type Barley

One feeding test was conducted in which hulless barley was compared with an ordinary hull type barley, Odessa. Both barleys were good quality and standard weight. Both were ground and supplemented with tankage, alfalfa hay, and a mineral mixture. The feeding was done free-choice method. Eight thrifty shoats averaging 146 pounds were fed in each group. Those fed the hulless barley gained 1.84 and those fed the hull barley 1.65 pounds each a day. The pigs fed the hulless barley required less grain but more tankage to produce 100 pounds of gain than those fed the hull barley, the hulless barley giving results somewhat similar to corn in this respect. The total amount of feed required for 100 pounds of gain was 361 for the hulless and 376 for the hull barley. These figures would indicate that the hulless barley can be used advantageously for fattening where the yield or price is practically the same as for the hulled type.

POINTS IMPORTANT TO THE FARMER and indicated in studies reported in this bulletin are:

A fairly good measure of the feeding value of lightweight barleys as compared with standard-weight barleys is test weight per bushel unless this weight is under 32 pounds.

Lightweight barleys often will give the grower a higher return when they are fed to fattening pigs than when they are marketed.

In these feeding trials, feed-type barley and malting-type barley, test weights per bushel considered, had almost the same feed value for shoats.

Hulless barleys in one feeding trial proved only slightly better than a hull type (Odessa) for fattening well-grown shoats.

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